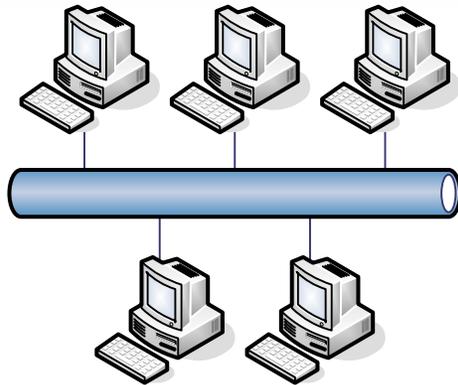


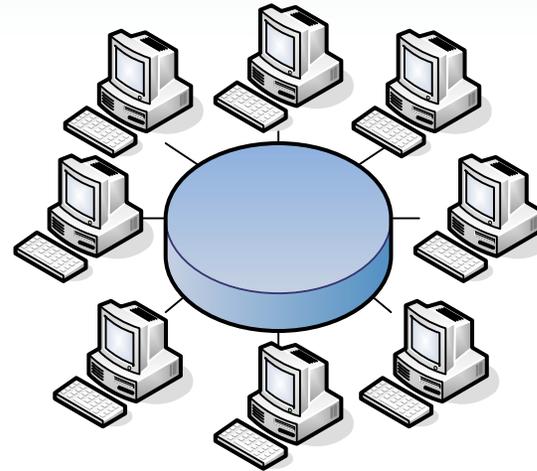
Internetworking Motivation

Dr Steve Gordon
ICT, SIIT

Local Area Networks



Ethernet



Token Ring

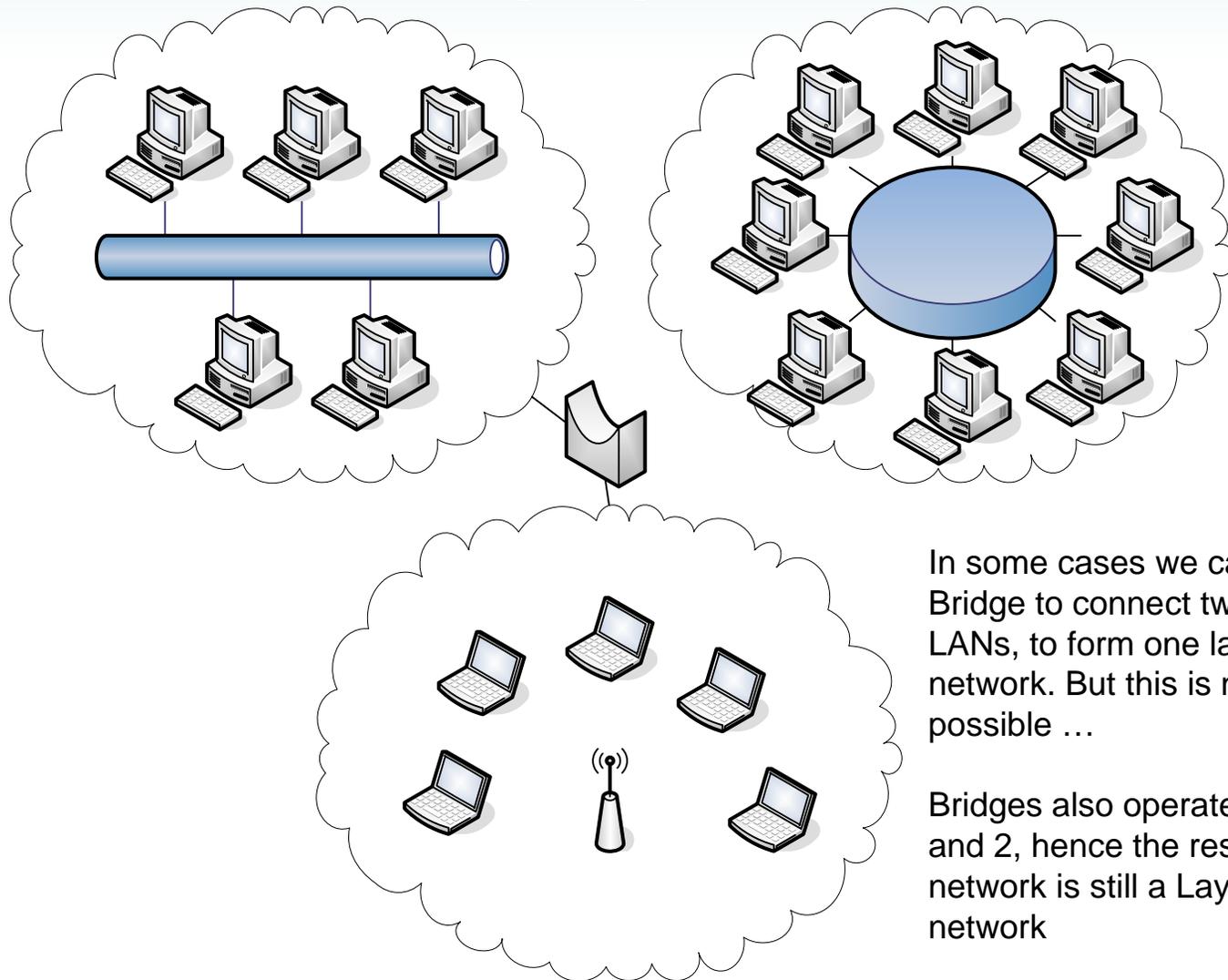


Wireless LAN

Different types of LANs: different topologies, different technologies, different purposes

Many LANs operate at layers 1 and 2 (Physical and Data Link Layer) using switches and hubs

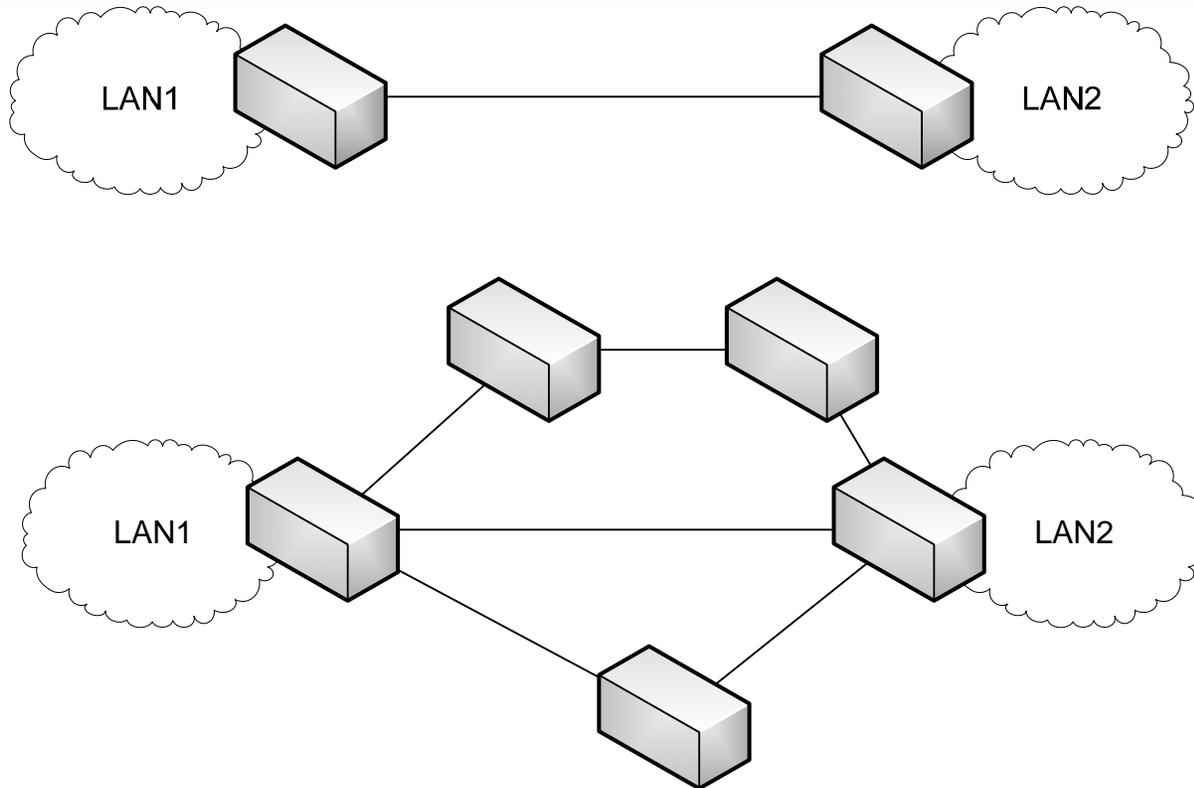
Bridging LANs



In some cases we can use a Bridge to connect two or more LANs, to form one larger network. But this is not always possible ...

Bridges also operate at Layer 1 and 2, hence the resulting network is still a Layer 1 and 2 network

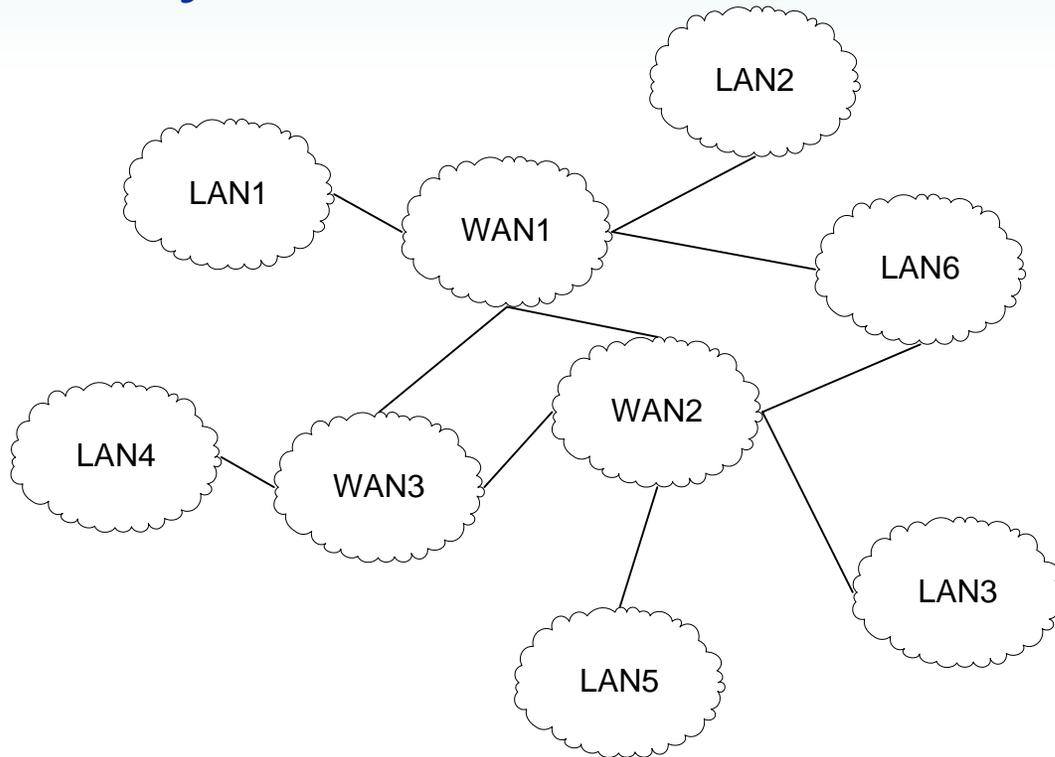
Wide Area Networks



WANs can interconnect LANs over a larger distance. The WAN can either be a point-to-point link (e.g. ADSL, PDH) or a network (e.g. ATM, SDH, telephone).

WANs typically operate at Layers 1 and 2 (although some such as X.25 and ATM perform some Layer 3 operations).

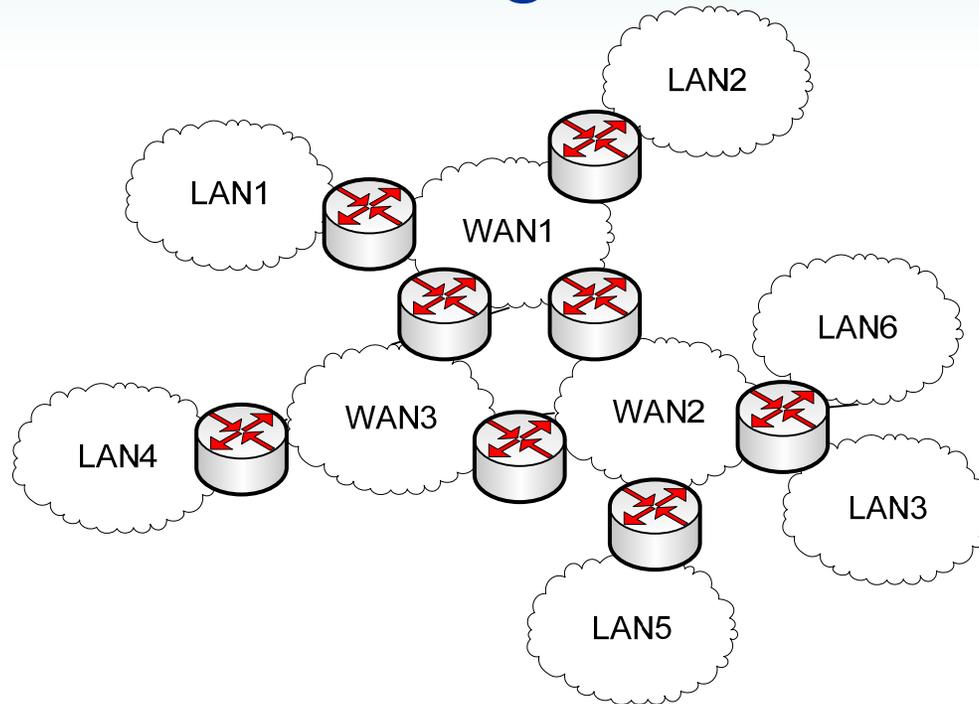
Many Different LANs/WANs



The aim is to allow any computer to communicate with any other computer, independent of what LAN/WAN they are connected to.

Internetworking involves connecting the many different types of LANs/WANs together to achieve this aim.

Internetworking with Routers



Internetworking is performed using **routers**.

Routers connect two or more LANs or WANs together. Routers operate at **Layer 3** (the Networking layer)

Terminology: a LAN is a “network”; a WAN is a “network” and if we connect them together we get one bigger “network”. Sometimes we will refer to the “smaller” constituent networks (LANs/WANs) as **subnetworks** and the resulting bigger network as an **internet**.